fluted, and consist of exquisitely inlaid malachite from the province of Perm, discovered in 1831 in a copper mine of M. de Demidof, the largest seam ever known, being 17 feet 6 inches long, 8 feet 2 inches wide, and 4 feet 6 inches high; the weight of which mass has been calculated at 120,000lbs., or 50 tons. The bases and capitals are of bronze gilt—I should state that there is a cylinder of cast iron to each column, forming a core, covered by a brass cylinder, to which the malachite is attached, the pieces being fitted with such exquisite skill that the columns and pilasters appear to be of one enormous block. The whole iconostasis has incrustations of porphyry, jasper, malachite, and other precious stones of the country. An attic 20 feet high rises above the order, which in the centre is again surmounted by a supplementary attic, flanked by 2 angels, and forming the pedestal upon which is raised the cross, with a group of angels at the base in the attitude of prayer, and grief, and devotion. Groups representing the resurrection of our Saviour and the ascent of the Virgin Mary flank the circular-headed aperture of the central doorway. There are 3 tiers of pictures of saints, the Virgin, our Saviour, and the Almighty, who occupy the central compartment, and other sacred personages the side divisions, all painted on a gold ground, clad in rich vestments, and bedecked with jewels. In conformity with the canons of the Greek Church, there are no other figures in relief than the angels. The door which closes the centre aperture is of silver, 34 feet high; the side doors are of marble. A profusion of lamps, all of massive silver, are pendant from the ceiling, hanging in front of the pictures.

Behind the iconostasis are 3 sanctuaries, the central one with the high altar, which is surmounted by a baldachin, or canopy, supported by 8 marble columns. Each of the side chapels has its own iconostasis and altar, dedicated respectively to S. Alexander Newsky and S. Catherine. These secondary iconostases are 40 feet wide each, and above 25 feet high, but a central attic and surmounting group of the Ascension increase the total height of the loftiest part to 40 feet. They are of white marble, designed in the cinquecento style, and elaborately ornamented, the panels being filled with gorgeous pictures of saints on a gold ground. But, in truth, all these paintings, although executed with consummate art, are but temporary, as they are ultimately to be taken out and replaced with resplendent mosaics. In fact, this group of 3 sanctuaries, with their iconostasis, altars, and side door-screens, dividing the central altar-place from the side chapels, composed of the most exquisite marble, profusely enriched with sculptures, paintings, and bronze gilt, make a dazzling group, of which we can form no adequate conception, even if we can in imagination realise the restoration of the sanctuary of the most ornate of our principal cathedrals, carved and painted throughout—emblazoned in all the pomp of the most profuse polychromy, and abounding with statues and groups of the Saviour, the Virgin, the Patriarchs, the Prophets, the Apostles, Saints, and Martyrs of the religious calendar of the middle ages.

The general decoration of the interior of the church consists, first, of a low stylobate or dado, nearly 5 feet high, above which is a Corinthian order of columns and pilasters, 42 feet high; and this is again surmounted by a lofty attic, with pilasters and cornice, 21 feet high. The loftiness of this attic, being half that of the principal order, detracts materially from the importance of the order; and, in fact, there seems no necessity for dividing the height into 2, for if the outer order of the porticoes had been continued inside, the effect would have been nobler, and the expectations of the beholder, excited by the proportions and scale of the outer order, would have been realised also within the church. From the top of the attic spring the vaultings of the ceilings of the church, which are sumptuously enriched. The cornice of the attic is not of sufficient importance to act as the impost of the vaultings. The intersection or crux of the arms of the cross is surmounted by the dome, 96 feet in diameter and 196 feet high, from the pavement to the cupola of the lantern, and 332 to the top of the cross. Immediately over the pendentives formed by the intersection of the vaultings, and the naves and transepts, is a lofty stylobate, 27 feet high, in the periphery of which are 12 angels, 19 feet high, supporting consols.

The wall of the drum of the cupola is pierced by twelve circular headed windows, and the order, 46 feet high, is Corinthian, like that of S. Peter's and our own S. Paul's, and most other similar cathedrals. The pilasters are fluted. The dome rises to a height of 40 feet above the entablature of the order of the drum. It is not divided into compartments, but forms a vast plain surface, decorated with a picture of the celestial glorification of the Virgin Mary. In the centre of the dome is an aperture 21 feet in diameter, opening into an upper dome, formed by the intermediate cone, and on the surface of this is also a painting of the glorification of the Redeemer. The whole surface of the walls of the interior of the church and vaultings, with the columns, pilasters and dressings, are all cased with white and various coloured marbles, from Finland and Italy; the bases and caps are of bronze gilt in "or molu." For the purpose of procuring a white marble superior even to that of Carrara, a Tuscan company undertook to open a new quarry at Seravezza. Bridges were constructed over torrents and ravines, roads were formed on the sides of perpendicular rocks, and habitations and workshops were erected for the workmen, in order to provide this choicer material. The marbles from Finland were red, violet, black, and mixed, and were used in the mosaic pavement, in the construction of the basement, and in the four smaller cupolas to the steeples, at the angles of the church. The Chevalier de Montferrand has paid great attention to the decoration of the vaultings of the interior, which are distributed in large divisions. Forty colossal figures, in high relief, of galvanised bronze, and in the proportion of 21 feet high, form the chief features of this decoration. They represent the prophets, patriarchs, and angels, with their various attributes. Some stand on corbels; others are seated within niches.*

T. L. DONALDSON.

ROYAL INSTITUTE OF ARCHITECTS.

GEOMETRIC DESIGN.

AT an ordinary meeting held on the 4th instant, Mr. Bellamy in the chair, Mr. G. P. Boyce was elected an associate; and a number of donations were announced, including Signor Borsato's work on "Architectural Decoration," parts of the "Baronial and Ecclesiastical Antiquities of Scotland," Mr. Fergusson's book on the "Principles of Beauty," and Messrs. Walker, Brunel, and W. Cubitt's "Report on the City Sewers."

Mr. Donaldson, in commenting on the donations, said the report on the sewers was a document of high interest: as the work of three distinguished engineers it had great weight, and it served as a complete justification of the city commissioners. Respecting the "Baronial Antiquities of Scotland," he thought it one of the best of its class, and he was glad to see there that evening the three busy B's who were engaged in producing it, namely, Billings, Burn, and Blackwood.

Mr. Godwin said that, having recently had an opportunity of testing the accuracy of the Scotch illustrations on the spot, he could not avoid adding his testimony in its favour. As to the Report on the Sewers, it could not be read without great interest, as it would be found to present the most startling contradictions to the opinions entertained by those who had officially the control of the metropolitan sewers. The latter contended for small sewers, the three eminent engineers for large: the one body considered that the *form* of sewer was an important question, and ought to be egg-shape; the other, that it was of very little consequence, but that they should prefer a sewer with a *flat bottom!* Sewerage was a matter of so much consequence, and involved the expenditure of such large sums of money, that he thought it would be useful if some unprejudiced person, some person not committed to an opinion, would carefully collate and examine the arguments on both sides, and bring the result before them.

Mr. I'Anson thought a discussion of this report of considerable importance. He would not disguise from the meeting that he was a prejudiced person, but the three gentlemen who were appointed to report on the City sewers had been so appointed because they were impartial. So much had been violently urged, and most improperly urged, against the system formerly used, that it gladdened him to see these gentlemen giving their strong opinion in favour of it. Former commissions and their officers had been shamefully stigmatised, and he was glad to find these engineers stating that the expenditure in the City had been judicious, and that the authorities had done their duty.

Mr. Woodthorpe said he had obtained this copy of the report for the Institute, because he thought most improper remarks had been made by persons now in power, and it seemed to him right that members of the profession should see, by this report, that these remarks could not be justified.

The Chairman agreed in thinking that the suggested examination would be useful, and then called on Mr. Billings, to give a discourse on the Infinity of Geometric Design as regards Tracery.

Mr. Billings commenced his observations with some remarks on the present practice and position of architecture. He objected to the unwise use of gaudy colourings, and condemned the mode in which the Temple Church had been disfigured. In its original state it was the artificial infinite realised: now the whole was contracted and brought down on the head of the beholder. There were other buildings to which the remark would apply. Look to the House of——but no; he was one of those who would rather run a mile than fight a minute, and he would not provoke a controversy. Only a short time ago the idea of geometric principles in Gothic architecture was laughed at; but now the fact was well understood and generally admitted. Why should modern architects be content with simply copying?—why stand still and exhibit no invention? The use of glass and iron ought alone to have led to an entirely new style. The fact was, they succumbed to lay and clerical masters, who positively would not let them design. Why was this permitted? Architects too readily gave way to amateur pretenders. When he first introduced the system of squares for tracery he had been laughed at, but these squares, like the British squares at Waterloo, had never been broken. Pursuing the same train of thought, he had been striving to discover the means by which the Gothic architects achieved such infinite variety of design, and he had succeeded, he believed, to a great extent. On one fixed design, namely, a circle divided into eight compartments, with four smaller circles within it, placed around the circumference, and each one-third the size of the enclosing circle, he had constructed 100 different panels of tracery, not one of which could be called vulgar Gothic. They were all purely geometric; no rule of thumb in them, and any one could draw them, when he knew how. Geometric forms he thought the most graceful of all forms. An entirely new field was opening to the designer, and would doubtless be well worked.

The lecturer then explained the construction of a large number of these panels, which displayed extraordinary variety and beauty;—the variety was caused simply by varying the position of the connecting curves. He said he was most anxious that others should get on the same scent, with a view to other branches of design. These designs, forming a book, would be published at a low price, and he looked for general support.

The chairman, Mr. Burn, and Mr. Donaldson, afterwards spoke at some length, and the meeting was then adjourned.

* The remainder next week, when we shall give a section of the iron construction in dome.

RAILWAY BAKERIES.—A Belgian has hit upon a very economical notion. He proposes to attach bakehouses to the stations on the railways where the coke furnaces are placed, and to bake the bread with the lost heat. By placing the red-hot coke to cool in the bakehouses, instead of allowing it to remain in the furnaces, where the heat is altogether wasted, he will bake his bread in forty minutes without any expense of fuel.

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